



Manures as fertilizers in organic crops

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INTRODUCTION

Animal manure management such as liquid manure or composted solid manure alters manure's chemical, physical and biological properties. Management can have cascading effects on agroecosystems, affecting soils, beneficial and pathogenic microbes, weeds, and insect pests, ultimately influencing yield and profitability. By manipulating animal manures, we have an opportunity to help combat pest problems faced by organic growers while identifying ways to reduce their production costs.

OVERALL OBJECTIVE

We are comparing 3 manure management types to identify practices that benefit pest management, focusing on insects, weeds, and pathogens, and look at mechanisms to explain these benefits.

TREATMENTS

COMPOST

requires aeration to stimulate microbial decomposition which heats the compost to up to 76°C. Often, fresh or solid manures are combined with wood chips or bedding to establish an ideal C:N ratio (25-40:1) for composting.



LIQUID

has <5% solids and includes wastes from wash- or rain- water. It can be stored in tanks or in ponds, and then pumped into tankers or irrigation equipment and sprayed over fields, or injected into the soil



DRY

scraped or loaded from livestock barns and either piled on hard-packed earth and covered with a tarp (also called stockpiling) or piled on a concrete pad with three walls.



CONTROL

Fig 1. The three cattle manure treatments- liquid, composted and dry stacked plus an unfertilized control in a corn-soy-wheat rotation

EXPERIMENTAL LAYOUT

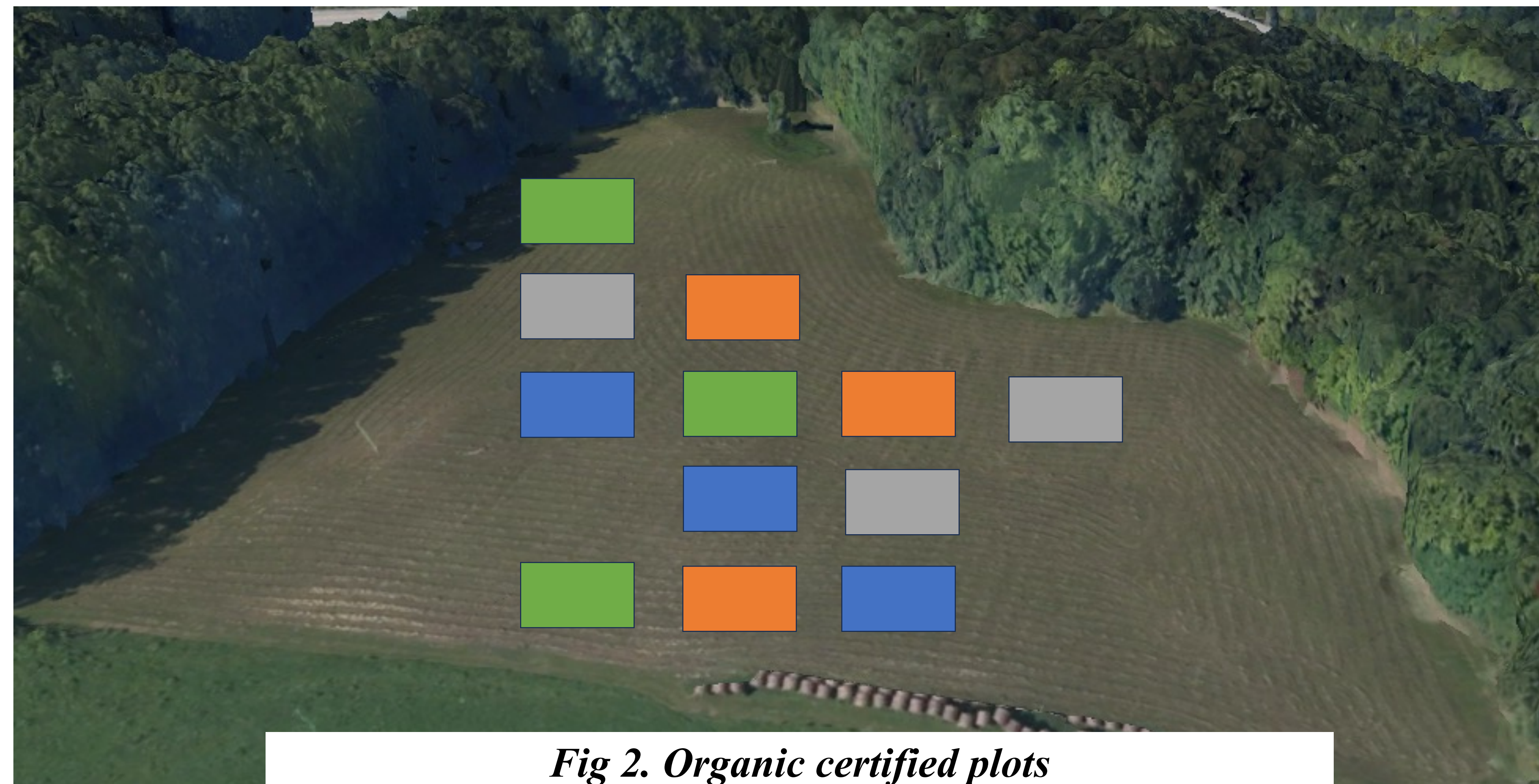


Fig 2. Organic certified plots



Fig 3. In transition plots

WHAT WE ARE MEASURING

BUGS

WEEDS

SOIL MICROBES

YIELD

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